



22 DEC 2005  
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GREER, BURNS & CRAIN  
300 S WACKER DR  
25TH FLOOR  
CHICAGO, IL 60606

In re Application of GONG et al	:	
U.S. Application No.: 10/518,118	:	
PCT Application No.: PCT/CN03/00156	:	
Int. Filing Date: 27 February 2003	:	COMMUNICATION
Priority Date Claimed: 18 June 2002	:	
Attorney Docket No.: 1238.72142	:	
For: CHIRAL CATALYST, PROCESS FOR	:	
PREPARING THE SAME...	:	

This is in response to applicant's "Request for Corrected Filing Receipt" filed 07 September 2005.

On 15 December 2004, for a small entity the basic national fee under 35 U.S.C. 371 was \$150.00, the search fee in cases which a search report was provided to the USPTO was \$200.00, and the examination fee was \$100.00. See *Federal Register*, Vol.70, No.20, pp.5053-5, February 1, 2005. Therefore, the national stage fees totaled \$450.00, and no fee correction on the filing receipt is indicated.

A corrected filing receipt which reflects the proper number of independent claims will be sent under separate cover.

Bryan Tung  
PCT Legal Examiner  
Office of PCT Legal Administration

Telephone: 571-272-3303  
Facsimile: 571-273-0459

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:

Applicant(s): GONG, Liuzhu et al.

Serial No.: 10/518,118

Filed: December 15, 2004

For: CHIRAL CATALYST, PROCESS FOR  
PREPARING THE SAME AND ITS  
USE IN THE OXIDATE COUPLING  
OF NAPHTHOIS DISPLAY VESSEL

Art Unit: 1754

Examiner: Not yet assigned



I hereby certify that this paper is being deposited with the United States Postal Service as FIRST-CLASS mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this date.

August 31, 2005

Date

Attorney for Applicant(s)

Registration No. 31,497

**RECEIVED**REQUEST FOR CORRECTED FILING RECEIPT

22 DEC 2005

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Legal Staff  
International Division

Dear Sir:

In the Filing Receipt issued for the above-identified patent application, please correct the "FIL FEE REC'D" as follows: delete "450" and insert --540--. Enclosed is a copy of the transmittal and cancelled check. Furthermore, please correct the "IND CLMS" as follows: delete "1" and insert -3--.

Applicants respectfully request that a Corrected Filing Receipt bearing the above corrections be issued for the above-identified application. A copy of the filing receipt with the changes marked is enclosed.

Respectfully submitted,

GREER, BURNS &amp; CRAIN, LTD.

By

*Lawrence J. Crain*  
Lawrence J. Crain  
Registration No. 31,497  
Attorney for Applicants

August 31, 2005  
300 S. Wacker Drive - Suite 2500  
Chicago, Illinois 60606  
Tel.: (312) 360-0080  
Customer No.: 24978

## GREER, BURNS &amp; CRAIN, LTD.

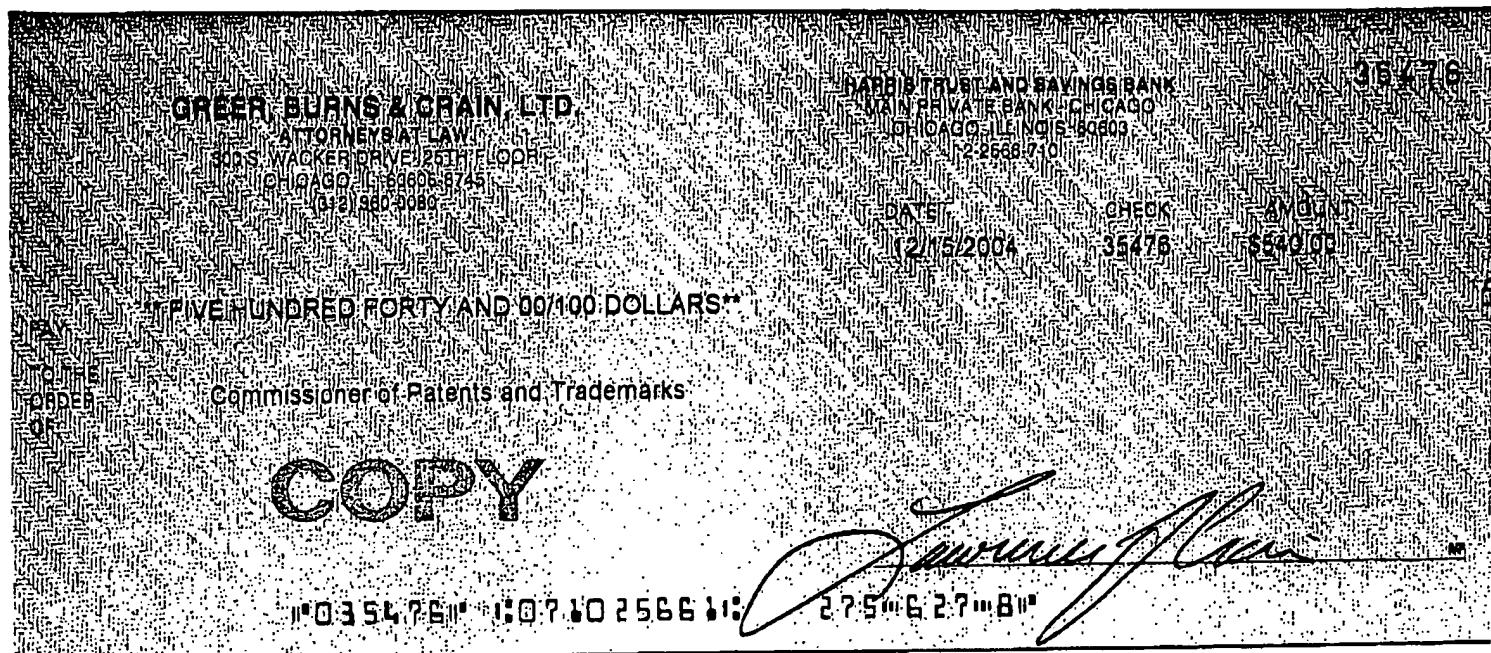
35476

DATE	DESCRIPTION	INVOICE #	CHECK				NET AMOUNT
			AMOUNT	DEDUCTION	35476		
0002	Commissioner of Patents and Trademarks						35476
12/15/2004	PTO Filing Fee New National Phase Filing Application Fee		Invoice #	Exp Code	Client #	Matter #	GL #
				306	1238	72142	11202
							Amount
							540.00



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CHECK DATE 12/15/2004	CONTROL NUMBER	TOTALS ►	540.00
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0002 Commissioner of Patents and Trademarks

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35476

Amount

Date	Description	Invoice #	Exp Code	Client #	Matter	GL #	Amount
12/15/2004	PTO Filing Fee New National Phase Filing Application Fee		306	1238	72142	11202	540.00

Total this stub

540.00

<b>TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371</b>		ATTORNEY'S DOCKET NUMBER <b>1238 72142</b>
INTERNATIONAL APPLICATION NO. <b>PCT/CN03/00156</b>	INTERNATIONAL FILING DATE <b>27 February 2003 (27.02.03)</b>	PRIORITY DATE CLAIMED <b>18 June 2002 (18.06.02)</b>
TITLE OF INVENTION <b>A CHIRAL CATALYST USED FOR OXIDATIVE COUPLING OF NAPHTHOLS, PROCESS FOR PREPARING THE SAME AND ITS USE IN ASYMMETRIC OXIDATIVE COUPLING OF 2-NAPHTHOLES</b>		
APPLICANT(S) FOR DO/EO/US <b>GONG, Liuzhi; LUO, Zhibin; LIU, Quanzhong; MI, Aiqiao; JIANG, Yaozhong</b>		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<p>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a submission under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a submission under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))           <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ul> </p> <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).           <ul style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ul> </p> <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))           <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ul> </p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p>		
Items 11 to 20 below concern document(s) or information included:		
<p>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. I hereby certify that this paper is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this date: <b>December 15, 2004</b> </p> <p>13. <input type="checkbox"/> A preliminary amendment.</p> <p>14. <input type="checkbox"/> An Application Data Sheet under 37 CFR 1.76.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A power of attorney and/or change of address letter. Date <b>December 15, 2004</b> Express Mail Label No. <b>EL965134791US</b></p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821-1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published International Application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: <b>International Search Report</b></p>		

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER					
		PCT/CN03/00136	1238.72142					
21. The following fees are submitted:								
<input checked="" type="checkbox"/> a) Basic national fee..... \$300.00 <input checked="" type="checkbox"/> b) Examination fee..... \$200.00 <input checked="" type="checkbox"/> c) Search fee..... \$500.00 <b>TOTAL OF ABOVE CALCULATIONS =</b> \$1000.00								
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in an electronic medium). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.								
Total Sheets	Extra sheets	Number of each additional 50 or fraction thereof (round up to a whole number)	RATE					
17 - 100 =	0 /50 =		x \$250.00					
Surcharge of \$130.00 for furnishing the oath or declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(e)).								
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE					
Total claims	14 - 20 =	0	x \$50.00					
Independent claims	3 - 3 =	0	x \$200.00					
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$360.00					
<b>TOTAL OF ABOVE CALCULATIONS =</b> \$ 1,000.00								
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/4.								
<b>SUBTOTAL =</b> \$ 500.00								
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(f)).								
<b>TOTAL NATIONAL FEE =</b> \$ 500.00								
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property								
<b>TOTAL FEES ENCLOSED =</b> \$ 540.00								
<table border="1"> <tr> <td>Amount to be refunded:</td> <td>\$</td> </tr> <tr> <td>Amount to be charged:</td> <td>\$</td> </tr> </table>					Amount to be refunded:	\$	Amount to be charged:	\$
Amount to be refunded:	\$							
Amount to be charged:	\$							
a. <input checked="" type="checkbox"/> A check in the amount of \$ 540.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>07-2069</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.								
NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.								
SEND ALL CORRESPONDENCE TO: <b>LAWRENCE J. CRAIN, ESQ.</b> <b>GREER, BURNS &amp; CRAIN, LTD.</b> <b>SUITE 2500</b> <b>300 SOUTH WACKER DRIVE</b> <b>CHICAGO, ILLINOIS 60606</b> <b>312 360-0080</b> <b>312 360-9315</b>								
 SIGNATURE <u>Lawrence J. Crain</u> NAME <u>31497</u> REGISTRATION NUMBER								



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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY.DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/518,118	12/15/2004	1754	450 540	1238.72142		14	13

CONFIRMATION NO. 3259

24978  
 GREER, BURNS & CRAIN  
 300 S WACKER DR  
 25TH FLOOR  
 CHICAGO, IL 60606

## FILING RECEIPT



\*OC000000016641741\*

Date Mailed: 08/01/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Liuzhu Gong, Sichuan, CHINA;  
 Zhibin Luo, Sichuan, CHINA;  
 Quanzhong Liu, Sichuan, CHINA;  
 Aiqiao Mi, Sichuan, CHINA;  
 Yaozhong Jiang, Sichuan, CHINA;

## Assignment For Published Patent Application

Chengdu Institute of Organic Chemistry Chinese Academy of Sciences, Chengdu, Sichuan,  
 CHINA

**Power of Attorney:** The patent practitioners associated with Customer Number 24978.

## Domestic Priority data as claimed by applicant

This application is a 371 of PCT/CN03/00156 02/27/2003

## Foreign Applications

CHINA 02133305.X 06/18/2002

**Projected Publication Date:** 11/03/2005

**Non-Publication Request:** No

**Early Publication Request:** No

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 2005 AUG -8 AM 9:58

**\*\* SMALL ENTITY \*\***

**Title**

Chiral catalyst, process for preparing the same and its use in the oxidate coupling of naphthols

**Preliminary Class**

502

**PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result in a grant of "an international patent"** and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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**LICENSE FOR FOREIGN FILING UNDER**

**Title 35, United States Code, Section 184**

**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Office of Export Administration, Department of Commerce (15 CFR 370.10 (j)); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371		ATTORNEY'S DOCKET NUMBER 1238 72142 U.S. APPLICATION NUMBER, FILED OR 17 CFR 1.5 107518118
INTERNATIONAL APPLICATION NO. PCT/CN03/00156	INTERNATIONAL FILING DATE 27 February 2003 (27.02.03)	PRIORITY DATE CLAIMED 18 June 2002 (18.06.02)
TITLE OF INVENTION A CHIRAL CATALYST USED FOR OXIDATIVE COUPLING OF NAPHTHOLS, PROCESS FOR PREPARING THE SAME AND ITS USE IN ASYMMETRIC OXIDATIVE COUPLING OF 2-NAPHTHOLS		
APPLICANT(S) FOR DO/EO/US GONG, Liuzhu; LUO, Zhibin; LIU, Quanzhong; MI, Aiqiao; JIANG, Yaozhong		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<p>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a submission under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a submission under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))           <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ul> </p> <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))           <ul style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ul> </p> <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))           <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ul> </p> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p>		
Items 11 to 20 below concern document(s) or information included:		
<p>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. I hereby certify that this paper is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this date: </p> <p>13. <input type="checkbox"/> A preliminary amendment.</p> <p>14. <input type="checkbox"/> An Application Data Sheet under 37 CFR 1.76.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A power of attorney and/or change of address letter. Date December 15, 2004 Express Mail Label No. EL965134791US</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821-1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published International Application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: International Search Report</p>		

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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2003年12月24日(24.12.2003)

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(10) 国际公布号:  
WO 03/106467 A1

10/518118

(51) 国际分类号: C07F 9/00, B01J 31/36  
 (21) 国际申请号: PCT/CN03/00156  
 (22) 国际申请日: 2003年2月27日(27.02.2003)  
 (25) 申请语言: 中文  
 (26) 公布语言: 中文  
 (30) 优先权: 02133305.X 2002年6月18日(18.06.2002) CN

(71) 申请人(除美国以外的所有指定国): 中国科学院  
成都有机化学研究所(CHENGDU INSTITUTE OF  
ORGANIC CHEMISTRY, CHINESE ACADEMY  
OF SCIENCES) [CN/CN]; 中国四川省成都市人民  
南路四段9号, Sichuan 610041 (CN).

(72) 发明人; 及  
 (73) 发明人/申请人(仅对美国): 龚流柱(GONG, Liuzhu) [CN/CN]; 罗治斌(LOU, Zhibin) [CN/CN]; 刘全忠  
(LIU, Quanzhong) [CN/CN]; 密爱巧(MI, Aiqiao) [CN/CN]; 蒋耀忠(JIANG, Yaohong) [CN/CN]; 中国  
四川省成都市人民南路四段9号, Sichuan 610041 (CN).

(74) 代理人:  
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(81) 指定国(国家): AE, AG, AL, AM, AT, AU, AZ, BA,  
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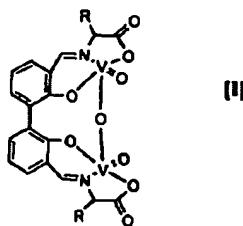
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(54) Title: CHIRAL CATALYST, PROCESS FOR PREPARING THE SAME AND ITS USE IN THE OXIDATIVE COUPLING OF NAPHTHOLS

(54) 发明名称: 用于氧化偶联萘酚的手性催化剂及其制备方法及应用



(57) Abstract: The present invention concerns a chiral catalyst that can be used in the oxidative coupling of naphthol, characterized in that the said chiral catalyst is a complex between vanadium and a Schiff base which is formed by a chiral amino acid and a formyl-biphenyldiol, wherein the chirality is induced by the chiral amino acid. The complex has following structure [II]: wherein R is selected from the group consisting of benzyl, isopropyl, isobutyl and tert-butyl; and the amino acid has R or S configuration. When the chiral catalyst of the present invention is used in the catalytically oxidative couplings of naphthols or their derivatives, optically highly pure binaphthylidols or their derivatives can be obtained.

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